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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/747,932	12/27/2000	Jang-Jin Yoo	8733.368.00	3458

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WASHINGTON, DC 20006

EXAMINER
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AKKAPEDDI, PRASAD R

ART UNIT	PAPER NUMBER
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2871

DATE MAILED: 04/08/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/747,932

Applicant(s)

YOO ET AL.

Examiner

Prasad R Akkapeddi

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 20 February 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 December 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other:

**DETAILED ACTION**

***Response to Amendment***

1. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

2. Applicant's arguments with respect to claims 1-17 have been considered but are moot. The original rejections as stated in the Office action dated November 14, 2002 are still valid.

***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

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4. Claims 1 and 12 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The new matter in the claims is 'nematic liquid crystal'.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vorfloussev (U.S. Patent No. 5,973,762) in view of Reimer et al. (Reimer) (U.S. Patent No. 5,844,651)).

a. As to claims 1 and 2: Vorfloussev discloses a liquid crystal display device with a first substrate (12) have a first electrode (14) and a first orientation film (16) on the first electrode, wherein the first orientation film includes (16) a ferroelectric polymer (Col. 4, lines 18-19) and a second substrate (12) having a second electrode (14) and a second orientation film (16) on the second electrode and a liquid crystal layer (20) between the first and second substrates.

Vorfloussev also discloses that the second orientation film includes a conventional alignment polymer Col.4, line 29) (homogeneous alignment film).

Although Vorfloussev discloses that the orientation film includes ferroelectric

polymer, Vorfloussev does not disclose that the polymer is a liquid crystal type.

However, Reimer in disclosing a liquid crystal display, discloses the use of liquid crystal alignment films (4a and 4b) for liquid crystal display applications.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to adapt the liquid crystal alignment films disclosed by Reimer to the ferroelectric polymer disclosed by Vorfloussev for reduced temperature dependence.

7. Claims 3 - 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vorfloussev and Reimer as applied to claim 1 above, and further in view of Yoshinaga et al. (Yoshinaga) (U.S. Patent No. 5,372,745).

b. Although Vorfloussev and Reimer disclose the use of ferroelectric liquid crystal polymers and alignment films for display applications and though dielectric anisotropy is a property of these materials, they do not explicitly disclose this property. However, Yoshinaga in disclosing a similar liquid crystal display, discloses that there are two types of ferroelectric polymers which can have either positive or negative dielectric anisotropy (abstract and Col. 6, line 12) and have chiral dopant (Col. 9, line 51). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to adapt the either the positive or negative dielectric anisotropic properties of these materials as disclosed by Yoshinaga to the display device disclosed by Vorfloussev and Reimer to produce a large area display device.

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8. Claims 6-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vorfloussev and Reimer as applied to claim 1 above, and further in view of Mitsui et al. (Mitsui) (U.S. Patent No. 5,734,457).

Although Vorfloussev and Reimer disclose the use of ferroelectric polymers and liquid crystal alignment films for display applications, they do not explicitly disclose the use of either twisted nematic type of ferroelectric material or polarizers. Mitsui on the other hand, in disclosing a similar liquid crystal display device discloses a nematic liquid crystal twisted at an angle of 90 degrees (Col. 6, lines 36-37) and two polarizers (28, 29) and their orientation axes. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to adapt the twisted nematic liquid crystal layer and the polarizers as disclosed by Mitsui to the display device disclosed by Vorfloussev and Scherowsky to produce portable devices.

9. Claims 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vorfloussev and Reimer as applied to claim 1 above, and further in view of Yoshinaga et al. (Yoshinaga) (U.S. Patent No. 4,995,705).

Although Vorfloussev and Reimer disclose a liquid crystal display device, they do not disclose the method of manufacturing such a device. Yoshinaga on the other hand, discloses a liquid crystal display having an alignment layer with a ferroelectric polymer liquid crystal (Col. 23, line 33-37) and a method of fabrication of such a device (Example 16 and Fig. 14). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was

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made to adapt the method as disclosed by Yoshinaga to the display device disclosed by Vorfloussev and Reimer to fabricate such devices.

10. Claims 14-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vorfloussev, Reimer and Yoshinga as applied to claim 12 above, and further in view of Mitsui.

Mitsui discloses a nematic liquid crystal twisted at an angle of 90 degrees (Col. 6, lines 36-37) and two polarizers (28, 29) and their orientation axes. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to adapt the method as disclosed by Yoshinaga to the display device having the components disclosed by Mitsui to fabricate such devices.

#### ***Response to Arguments***

11. Following is the response by the examiner to the applicant's arguments.

(a) Applicant's argument No. 1 (Page 3, lines 7-9 and Page 4, lines 1-8): 'none of the cited references including Vorfloussev, singly or in combination, teach or suggest at least these features of the claimed invention.

Examiner's response to argument No. 1: Vorfloussev does disclose that the liquid crystal material is in its nematic phase (col. 5, lines 19-20) and the alignment layer includes a ferroelectric polymer. Reimer on the other hand does teach liquid crystal alignment films. So, a combination of these two teachings would have been obvious as stated in the original office action dated November 14, 2002. Besides, the applicant never really argued in his response about any unique advantages of using such a ferroelectric liquid crystal polymer as a first orientation layer, except to say in general

terms that the object of the invention is to provide an LCD device having a low color dependence on viewing angle and a high aperture ratio. These general features can also be obtained by several other means, as can be seen in the liquid crystal literature. Hence the argument lacks in pointing the specific advantage of the recited feature.

(b) Applicant's argument No. 2 (Page 3, lines 20-27): 'the cited references fail to provide sufficient motivation..... impermissible hindsight'.

Examiner's response to argument No. 2: In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Prasad R Akkapeddi whose telephone number is 703-305-4767. The examiner can normally be reached on 7:00AM to 5:30PM M-Th.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H Kim can be reached on 703-305-3492. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9318 for regular communications and 703-872-9319 for After Final communications.



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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0530.

*PRP*

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April 3, 2003

*T. Chowdhury*  
T. Chowdhury  
Primary Examiner  
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